



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

## NOTICE OF ALLOWANCE AND FEE(S) DUE

37013

7590

12/03/2010

ROSSI, KIMMS & McDOWELL LLP.  
20609 Gordon Park Square, Suite 150  
Ashburn, VA 20147

EXAMINER

FAULK, DEVONA E

ART UNIT

PAPER NUMBER

2614

DATE MAILED: 12/03/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,654	07/07/2006	Yusuke Konagai	YAMA-0135	5543

TITLE OF INVENTION: LOUDSPEAKER APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/03/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** Mail **Mail Stop ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, Virginia 22313-1450**  
 or Fax **(571)-273-2885**

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

37013 7590 12/03/2010

**ROSSI, KIMMS & McDOWELL LLP.**  
 20609 Gordon Park Square, Suite 150  
 Ashburn, VA 20147

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,654	07/07/2006	Yusuke Konagai	YAMA-0135	5543

TITLE OF INVENTION: LOUDSPEAKER APPARATUS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	03/03/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
FAULK, DEVONAE	2614	381-III000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB-122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB-47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,654	07/07/2006	Yusuke Konagai	YAMA-0135	5543
37013	7590	12/03/2010	EXAMINER	
ROSSI, KIMMS & McDOWELL LLP. 20609 Gordon Park Square, Suite 150 Ashburn, VA 20147			FAULK, DEVONA E	
			ART UNIT	PAPER NUMBER

2614  
DATE MAILED: 12/03/2010

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 190 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 190 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability****Application No.**

10/585,654

**Applicant(s)**

KONAGAI ET AL.

**Examiner**

DEVONA E. FAULK

**Art Unit**

2614

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/27/10.
2. ☒ The allowed claim(s) is/are 1,4,5,7-11,14-16 and 18-20.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments filed 7/27/10 have been fully considered but they were not persuasive. Art could still be applied to reject. The applicant agreed to an examiner's amendment to place the claims in allowable form.
2. Claims 2 and 6 are cancelled.
3. The claims withdrawn previously are being rejoined since they are dependent upon now allowable claim language.

**EXAMINER'S AMENDMENT**

4. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lyle Kimms (Reg. No. 34,079) on 11/5/10.

5. **The claims are to be amended as follows:**

**Claims 3,12,13, 17: CANCEL**

**Claim 1 is to be amended to recite the following:**

A loudspeaker apparatus comprising:

**a single** loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows; and

an audio signal processing unit that drives a plurality of loudspeaker blocks including at least a center-channel loudspeaker block, a front left-channel loudspeaker block, and a front right-channel loudspeaker block each composed of a group of loudspeaker elements in the loudspeaker array, respectively with a plurality of audio signals including at least a front left-channel signal, a front right-channel signal, and a center-channel signal,

wherein the center-channel loudspeaker block includes ~~at least~~ all of the loudspeaker elements in at least one of the plurality of stacked horizontal rows, and  
wherein at least some of the loudspeaker elements contained in one of the rows of one of the loudspeaker blocks are also part of another of the loudspeaker blocks, and  
wherein the plurality of stacked horizontal rows are composed of first, second, and third stacked horizontal rows,  
the front left-channel loudspeaker block is composed of the first and second horizontal rows,  
the front right-channel loudspeaker block is composed of the second and third horizontal rows, and  
the center-channel loudspeaker block is composed of the second horizontal row, a left half of one of the first or third horizontal row, and right half of the other of the first or third horizontal row.

Claim 4 is to be amended to recite the following:

The loudspeaker apparatus according to claim 4 ~~5~~, wherein ~~the loudspeaker blocks are respectively~~ each of the stacked horizontal rows is constructed as a separate unit[[s], and the loudspeaker array is composed of the separate units that are stacked.

**Claim 5 is to be amended to recite the following:**

**A loudspeaker apparatus according to claim 1, wherein comprising:**

**a loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows; and**

**an audio signal processing unit that drives a plurality of loudspeaker blocks including at least a center-channel loudspeaker block, a front left-channel loudspeaker block, and a front right-channel loudspeaker block, each composed of a group of loudspeaker elements in the loudspeaker array, respectively with a plurality of audio signals including at least a front left-channel signal, a front right-channel signal, and a center-channel signal,**

**wherein the center-channel loudspeaker block includes all of the loudspeaker elements in at least one of the plurality of stacked horizontal rows,**

**wherein each of the front left-channel and front right-channel** loudspeaker blocks **also include-comprises** a loudspeaker block for a high range and a loudspeaker block for a low range ~~for each of the left and right channel signals~~, and

**wherein** a width of the loudspeaker block for the high range ~~signal for~~ **of** each of the **front left-channel and front right-channel signals loudspeaker blocks** is smaller than a width of the loudspeaker block for the low range ~~signal for~~ **of** each of the **front left-channel and front right-channel signals loudspeaker blocks.**

**Claim 7 is to be amended to recite the following:**

The loudspeaker apparatus according to claim 4-5, wherein the loudspeaker block is configured so that output sound pressure of the respective loudspeaker rows becomes substantially uniform.

**Claim 8 is to be amended to recite the following:**

A loudspeaker apparatus comprising:

a loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows; and

an audio signal processing unit that drives a plurality of loudspeaker blocks including at least a center-channel loudspeaker block, a front left-channel loudspeaker block, and a front right-channel loudspeaker block, each composed of a group of loudspeaker elements in the loudspeaker array, respectively with a plurality of audio signals including at least a front left-channel signal, a front right-channel signal, and a center-channel signal, and divides ~~an~~ at least each of the front left-channel and front right-channel audio signals into a plurality of frequency band signals, including a high frequency range signal and a low frequency range signal,

wherein each of the front left-channel and front right-channel loudspeaker blocks comprises a first loudspeaker block for the high range signal and a second loudspeaker block for the low range signal,

wherein the audio signal processing unit drives, ~~with the high frequency range signal, a~~ each of the first loudspeaker blocks composed of less than all of the speaker elements in each of at least two rows among the plurality of stacked horizontal rows of loudspeaker elements, ~~and~~

wherein the audio signal processing unit drives, ~~with the low frequency range signal, a~~ each of the second loudspeaker blocks composed of all of the loudspeaker elements in a single horizontal row among the plurality of stacked horizontal rows, and

wherein a width of the first loudspeaker block for the high range signal of each of the front left-channel and front right-channel loudspeaker blocks is



**smaller than a width of the second loudspeaker block for the low range signal of each of the front left-channel and front right-channel loudspeaker blocks.**

**Claim 9 is to be amended to recite the following:**

The loudspeaker apparatus according to claim 4-5, wherein adjacent stacked horizontal rows are horizontally offset from each other so that vertically adjacent loudspeaker elements in the adjacent stacked horizontal rows are horizontally offset from one another.

**Claim 18 is to be amended to recite the following:**

The A loudspeaker-apparatus according to claim 8, wherein **comprising:**

**a loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows; and**

**an audio signal processing unit that divides an audio signal into a plurality of frequency band signals, including a high frequency range signal and a low frequency range signal,**

**wherein the audio signal processing unit drives, with the high frequency range signal, a first loudspeaker block composed of less than all of the speaker elements in each of at least two rows among the plurality of stacked horizontal rows of loudspeaker elements,**

**wherein the audio signal processing unit drives, with the low frequency range signal, a second loudspeaker block composed of all of the loudspeaker elements in a single horizontal row among the plurality of stacked horizontal rows,**

**wherein** the audio signal is composed of a left-channel signal, a center-channel signal, and a right-channel signal,

**wherein** the processing unit divides each of the left-channel and right-channel signals into the high frequency range signal and the low frequency range signal,

**wherein** the first loudspeaker block is composed of a left half of the at least two horizontal rows for the high frequency range signal of the left-channel signal,

**wherein** the second loudspeaker block is composed of one of the at least two horizontal rows for the low frequency range signal of the left-channel signal,-and

further including:

**wherein the audio signal processing unit drives** a third loudspeaker block composed of a right half of the at least two horizontal rows for the high frequency range signal of the right-channel signal,

**wherein the audio signal processing unit drives** a fourth loudspeaker block composed of the other of the at least two rows for the low frequency range signal of the right-channel signal, and

**wherein the audio signal processing unit drives** a fifth loudspeaker block composed of the at least two horizontal rows for the center-channel signal.

**Claim 19 is to be amended to recite the following:**

The loudspeaker apparatus according to claim 8, wherein:

~~the audio signal is composed of a left channel signal, a center channel signal, and a right channel signal,~~

~~the processing unit divides each of the left channel and right channel signals into the high frequency range signal and the low frequency range signal,~~

the plurality of stacked horizontal rows of loudspeakers elements is are composed of first, second, and third stacked horizontal rows,

the first loudspeaker block for the high frequency range signal of the left-channel signal is composed of a left half of the first and second horizontal rows ~~for the high frequency range signal of the left channel signal,~~

the second loudspeaker block for the low frequency range signal of the left-channel signal is composed of the first horizontal row ~~for the low frequency range signal of the left channel signal,~~ and

further including:

a third ~~the first~~ loudspeaker block for the high frequency range signal of the right-channel signal is composed of a right half of the second and third horizontal rows for the high frequency range signal of the right-channel signal,

a fourth ~~the second~~ loudspeaker block for the low frequency range signal of the right-channel signal is composed of the third row ~~for the low frequency range signal of the right channel signal,~~ and

a fifth ~~the center-channel~~ loudspeaker block is composed of the second horizontal row for the center-channel signal.

***Allowable Subject Matter***

6. Claims allowed.
7. The following is an examiner's statement of reasons for allowance: \*\*\*.
8. Regarding claims 1, 5,8 and 18, prior art Bank et al. (WO 99/08479).

discloses loudspeaker apparatus comprising:

a loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows (Figures 1 and 7); and

an audio signal processing unit that drives a plurality of loudspeaker blocks including at least a center-channel loudspeaker block, a front left-channel loudspeaker block, and a front right-channel loudspeaker block each composed of a group of loudspeaker elements in the loudspeaker array, respectively with a plurality of audio signals including at least a front left- channel signal, a front right-channel signal, and a center-channel signal (page 13, lines 16-30),

and wherein a center-channel loudspeaker block includes at least all of the loudspeaker elements in one of the horizontal row (Figure 1 and Figure 7).

Regarding claims 8 and prior art Furuta discloses a loudspeaker apparatus (Figures 1,5-8) comprising:

a loudspeaker array comprising a plurality of loudspeaker elements arranged in a plurality of stacked horizontal rows (loudspeaker arrays 2,3, Figures 1,5-8; ¶ 0011 under DETAILED DESCRIPTION section); and

an audio signal processing unit that divides an audio signal into a plurality of frequency band signals, including a high frequency range signal and a low frequency range signal

(filters 71-78 of Figure 5, 71a-78a of Figure 6, 81-88 of Figure 7; ¶¶ 0018- ¶¶ 0021 under DETAILED DESCRIPTION section).

Regarding claims 1,5,8 and 18, the prior art or combination thereof fails to disclose or make obvious the invention as a whole.

Claims 4,7,9-11,14-17,19,20 are allowed due to dependency on claims 1,5 and 8.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/  
Primary Examiner, Art Unit 2614